

| TYPE: | ACTIVE (REQUIRES H | IUMAN INTERV | ENTION) | | |
|---|---|--|--|--|--|
| REMOVABLE: | YES | | | | |
| FM APPROVED: TOP OF FLOOD | YES | | | | |
| BARRIER PANEL: | 14.2' DC DAT | UM (14.1' NAVD | 88) MIN. | | |
| SIDEWALK ATTACHEMENT REQUIRED: | | | E-DOWN ANCHO ASPHALT OR C | | |
| DESCRIPTION: | 3/8 OR 1/2" D PANELS DES MARINE GRA | IAMETER (SEE IGNED FOR RA DE LAMINATE, | BELOW) PID DEPLOYMEN STAINLESS STE | IT, CONSTRUCT | ED OF |
| | REINFORCE | D PVC CANVAS | | PART OF | GE OF VERTICAL THE PANEL IS ENTED IN CYAN |
| | | | | OUTLINE | |
| TYPICAL AQUAFEN PERIMETER BARR SEGEME | IER | 1 7 | 7 | | (500-YR F |
| | A | 4-1 | / | 1 | <u>VARIES:</u> 4.92 FT (V 5.91 FT (V |
| FLOOD SIDI | | | | | 6.89 FT (V VARIES P |
| ADJUSTABLE PANE | 5 | | | 17 | SIDEWAL |
| ANCHOR ARMS | | | 7 | | |
| TYPICAL AQUAFEN OUTSIDE BARR | | | | | |
| CORNER) SEGEME | | i- | | | |
| FLOOD SIDI | | // | Ĩ | | - Et- |
| X | | : / . | | | 12 |
| ADJUSTABLE PANE ANCHOR ARMS | | | | - | - |
| | | | 2 | | |
| <u>Aqua</u> Fenc | | | ypes of AN | | |
| AquaFence recommends panels to asphalt or concre damage from traffic, and r | ete pavements. T emovable caps s | he anchors shou hould be installe | ld be flush with th ed to protect the th | e pavement surfa reads and preven | ce to prevent t debris from |
| entering the threaded hole or stainless steel to resis Anchoring systems should this sheet for a typical and | t corrosion. And d be designed by | hor bolts can be an engineer an | e stored with the | panels for quick | deployment. |
| 01 | | | | | |
| 01 Asphalt P In asphalt pavements, specia 3/8" or 1/2" diameter bolts are | iny designed aspir | an pavement anci | nors for red with | Asphalt Paver | |
| fast-setting grout or epoxy. A examples of asphalt paveme anchor loads needed and the | nt anchors. Anch | or sizes will deper | | Zinc Plated or S side Thread 3/8" or | 1/2" Diameter Grout |
| | The second se | | Appro | oved by the Anchor | Self-leveling Manufacturer Plastic Cap |
| E . | | | | 3/8" or 1/2" Diam | neter to Match Anchor Used AnchorBolts |
| E E | ł | | | | 1/2" Diameter Washer |
| | chor in Place | Surface Vie | w. | Zinc Plated or S | Stainless Steel |
| 02 Concrete In concrete pavements, a num | Pavement | Anchor | | Ancho | or Specs |
| or adhesive-type anchor syst be used, depending on the re concrete. The same types of | ems for 3/8" or 1/2 quired anchor load | 2" diameter bolts c ds and strength of | an to | S | p-In Anchors tainless Steel Non-Flange |
| concrete walls. | T | | In | | 1/2" Diameter eel Cap Screw ead - Tapered |
| | | | - | 3/8" or 1/2" Diam | |
| | | O CAR | an a | Zinc Plated or S 3/8" or | |
| Concrete Anchor An | chor in Place | Surface Vie | w | Zinc Plated or S | |
| | | | a Transia al F | | A un a la a u |
| The following shows a ty embedded anchors in as | pical installati | on sequence fo | and the second | Fence panels to |) |
| do not need to be in exac | and the second second | 1000 (MARCH 1000) | | - | - |
| Remove cap.Clean area. | | 01 | | | |
| Prepare anchor bolts | and nuts. | | | | |
| | | | Place Aqu | aFence panels in | n position. |
| | | 02 | Place attaction the embed | chment arm dire Ided anchor so t | ectly over hat the |
| | | UL | Install bolt | aligns with the a t with washer th n attachment ar | rough |
| | | | | | |
| Hand-tighten both th bolt and the fastenin the panel to an even | g wheel on | 03 | 1 | | |
| Use a wrench to firm the anchor bolt. | | | | | |
| | 1 | | | | |
| These three steps are | the same for e | embedded and | chors in asphal | t or concrete pa | avements. |
| | | | No. No. | | |
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COMMISSION District of Columbia CASE NO. 17-055 EXHIBIT NO. 15A

FLOODPLAIN NARRATIVE

The DC Flood Hazard Rules are presented in Title 20 DCMR, Chapter 31, and outline the requirements for development in a regulatory floodplain with the purpose of promoting the public health, safety and general welfare, and to minimize public and private losses due to flood conditions. The regulations apply to all land located within a Special Flood Hazard Area (SFHA) within the jurisdiction of the District of Columbia (the District) as designated on the Flood Insurance Rate Map (FIRM) and in the Flood Insurance Study (FIS) for the District prepared by the Federal Emergency Management Agency (FEMA) with effective dates of September 27, 2010. River Point (Site) is located partially within a Zone AE SFHA associated with the Anacostia River requiring compliance with the DC Flood Hazard Rules.

The Flood Hazard Rules do not specifically allow for proposed mixed-use development within a regulatory floodplain. Therefore, as a mixed-use development proposed with below grade parking, the applicant must apply for a Code Modification in accordance with DCRA Administrative Bulletin CC2016-02 to justify that the project will be designed, constructed and protected in a way that is reasonably safe from flooding. Based on prior discussions with DOEE regarding the Code Modification request, the following summarizes site specific flood information and design elements of this development that will be implemented to ensure this project will remain reasonably safe from flooding:

Base Flood Elevation (BFE): The BFE associated with the Potomac River at Buzzard Point is 10.6 feet (NAVD 88).

Design Flood Elevation (DFE): The DFE agreed to between the Applicant and DOEE for this Site is the 500-year flood elevation of 14.1 feet (NAVD 88).

Encroachment Analysis: Due to the Site's location at the confluence of the Anacostia and Potomac Rivers, the flood elevation at this location along the Anacostia River is a backwater effect from the Potomac River. Development and fill placed in the floodplain of the Anacostia River at this location has no effect on flood elevations due to the backwater influence from the Potomac River.

Lowest Residential Floor Elevation: The lowest floor elevation of residential units is required to be at or above the DFE. The lowest floor shall be at elevation 32.53 feet DC Datum (32.43 feet NAVD 88), which is 18.33 feet above the DFE. An Elevation Certificate has been prepared (included on this sheet) and provided to the District to certify the elevations of the lowest residential floors.

Utilities and Ventilation Openings: All utilities and ventilation openings are required to be at least 1.5 feet above the BFE and therefore will be installed above elevation 12.1 feet (NAVD 88). An Elevation Certificate has been prepared (included on this sheet) and provided to the District to certify the elevations of utilities and ventilation openings.

<u>Floodproofing</u>: Floodproofing is required up to at least the DFE. Floodproofing shall consist of utilizing flood resistant construction materials in combination with dry-floodproofing up to an elevation of 14.1 feet (NAVD 88). Dry-floodproofing shall be accomplished through the use of an "active" (manual) flood barrier system that will require installation prior to flooding events. Due to the number of doors and the presence of windows around the perimeter of the building, the flood barrier system shall be designed to encompass and protect the entire building upon erection.

information as needed. Emergency Action Plan (EAP): An EAP shall be developed to identify stages at which emergency action is to be taken, including notification of key personnel for the installation of manual portions of the flood protection system. The EAP shall outline specific protocol for who is responsible for initiating certain notification procedures and list key contact information for responsible parties.

Affix Seal:

PE90736

FLOOD PROTECTION NOTES

WATERS.

- THE FLOOD EMERGENCY PLAN (FEP) SHALL BE POSTED PERMANENTLY IN AT LEAST TWO (2) CONSPICUOUS LOCATIONS WITHIN THE STRUCTURE.
- PROVISIONS WILL BE MADE FOR THE EVACUATION OF ALL OCCUPANTS BEFORE THE BUILDING IS ISOLATED BY FLOOD
- PROPOSED REFUGE AREAS DURING A FLOOD EVENT HAVE BEEN 3 DESIGNATED FOR OCCUPANTS WHO DO NOT EVACUATE PRIOR TO THE ONSET OF FLOODING:
 - REFUGE AREA NO. 1 -LOCATED AT V STREET, SW -ESTIMATED CAPACITY IS 70 OCCUPANTS STANDING SPACE MIN. -ALUMINUM 'CROSSOVER' PORTABLE LADDER TO BE
 - PROVIDED AT EACH REFUGE AREA TO REACH OVER THE FLOOD BARRIER REFUGE AREA NO. 2: -LOCATED ON 1ST STREET, SW
 - -ESTIMATED CAPACITY IS 70 OCCUPANTS STANDING SPACE MIN. -ALUMINUM 'CROSSOVER' PORTABLE LADDER TO BE PROVIDED AT EACH REFUGE AREA TO REACH OVER THE
- THIS PROJECT IS **NOT A CRITICAL FACILITY** SUCH AS A HOSPITAL OR A POLICE STATION. SHELTERING IN PLACE IS NOT ALLOWED. CLOSEST EVACUATION SHELTER IS JEFFERSON MIDDLE SCHOOL LOCATED AT 801 7TH STREET SW PER HSEMA SHELTER & EVACUATION GUIDE FOR WARD

FLOOD BARRIER

- STORAGE FOR REMOVABLE FLOOD BARRIERS IS ALLOCATED WITHIN P1 & P2 PARKING LEVELS
- FOR PRECISE SPOT ELEVATIONS PLEASE REFER TO CIVIL DRAWINGS, SHEET CIV0107. SPOT ELEVATIONS SHOWN ARE IN DC DATUM. FOR CONVERSION FORMULA INTO NAVD 88 DATUM SEE FLOODPLAIN CHART ABOVE.

| FLOODPLAIN INFO | | | | | |
|---|--|--|--|--|--|
| FLOOD ZONE: | YES (ZONE AE) | | | | |
| FIRM MAP/ PANEL NUMBER: | 110001 0057 C | | | | |
| MAP REVISED: | SEPTEMBER 27, 2010 | | | | |
| 100-YR FLOODPLAIN: | 10.7' EL. (DC DATUM) | | | | |
| 500-YR FLOODPLAIN: | 14.2' EL. (DC DATUM) | | | | |
| CONVERSION FORMULA FROM NAVD88 TO DC DATUM: | NAVD 88 + 0.1' = DC DATUM DC DATUM = NAVD 88 - 0.1' | | | | |

| BUILDI | NG LEVELS | |
|--|-----------|---------|
| LEVEL/ FLOOR | DC DATUM | NAVD 88 |
| P2 - PARKING LEVEL ***LOWEST FLOOR | -9.55' | -9.65' |
| P2 - PARKING LEVEL TOP OF ELEVATOR PIT | -14.63' | -14.73' |
| P1 - PARKING LEVEL | -0.76' | -0.86' |
| LEVEL 01 - GROUND | 9.95' | 9.85' |
| LEVEL 02 - CONTAINS MAIN ELECTRICAL ROOM ONLY | 19.87' | 19.77' |
| LEVEL 03 - LOWEST FLOOR WITH RESIDENTIAL DWELLING UNITS | 32.53' | 32.43' |
| LEVEL 04 | 43.20' | 43.10' |
| LEVEL 05 | 53.87' | 53.77' |
| LEVEL 06 | 64.53' | 64.43' |
| LEVEL 07 | 75.20' | 75.10' |
| LEVEL 08 | 85.87' | 85.77' |
| LEVEL PH (PENTHOUSE) | 97.78' | 97.68' |

| National Flood Insur | ance Program | | | | TE | | IMPORTANT: In these s |
|--|---------------------------|---|--|---|----------------------|------------------------------|---|
| | | | ATION CER | | | | Building Street Address (River Point Partners, LL |
| Copy all pages of thi | is Elevation Co | ertificate and all attach | nments for (1) commun | nity official, (2) in | surance agent/compa | any, and (3) building owner. | City Washington |
| | | TION A - PROPERT | TY INFORMATION | | 0.00000000000 | URANCE COMPANY USE | , , , , , , , , , , , , , , , , , , , |
| A1. Building Owr River Point Partn | | | | | Policy Nu | mber: | C1. Building elevations |
| | et Address (ir | ncluding Apt., Unit, Su | uite, and/or B I dg. No.) | or P.O. Route ar | nd Company | NAIC Number: | *A new Elevation (C2. Elevations – Zone Complete Items C |
| City | | | State | in the second | ZIP Code | | Benchmark Utilize |
| Washington | | | | t of Columbia | 20593 | | Indicate elevation of |
| A3. Property Des Square 613, Lot | | | Tax Parcel Number, Lo | egal Description, | , etc.) | | Datum used for bu |
| A4. Building Use | (e.g., Reside | ntia l , Non-Residentia | , Addition, Accessory | , etc.) Resident | ial Apartments w/ Co | ommercial at Ground | a) Top of bottom f |
| A5. Latitude/Long | gitude: Lat. | 38.51 | Long. 77.00 | Horizo | ntal Datum: 🔲 NAD | 0 1927 🖂 NAD 1983 | b) Top of the next |
| A6. Attach at lea | st 2 photograp | phs of the building if t | he Certificate is being | used to obtain f | ood insurance. | | c) Bottom of the lo |
| A7. Building Diag | gram Number | | | | | | d) Attached garag |
| A8. For a building | g with a craw | space or enclosure(s) |): | | | | e) Lowest elevatio (Describe type |
| a) Square fo | otage of craw | Ispace or enclosure(s | s) | sq ft | | | f) Lowest adjacer |
| b) Number o | f permanent f | lood openings in the d | crawlspace or enclosu | ire(s) within 1.0 f | oot above adjacent g | grade | g) Highest adjace |
| c) Total net a | area of f l ood o | openings in A8.b | sq | in | | | h) Lowest adjacer |
| d) Engineere | ed flood openi | ings? 🗌 Yes 🗌 | No | | | | structural suppo |
| A9. For a building | with an attac | hed garage: | | | | | - |
| | | | P1 & P2) 189,679 sq | | | | This certification is to be I certify that the informa statement may be puni- |
| b) Number o | f permanent f | ood openings in the a | attached garage withir | n 1.0 foot above a | adjacent grade n/a | | Were latitude and longi |
| | | openings in A9_b ngs? Yes X | n/a s | iq in | | | Certifier's Name Joseph M. Antunovich, |
| | - 1, | | | 111111111 | | | Title President |
| 1. | S | ECTION B - FLOOD | INSURANCE RATE | E MAP (FIRM) I | NFORMATION | 100 million (1990) | Company Name |
| | Contraction of the second | Community Number | B2. Count | y Name | | B3. State | Antunovich Associates |
| District of Colum B4. Map/Panel | B5. Suffix | | n/a B7. FIRM Panel | B8. Flood | B9. Base Flood | District of Columbia | Address 2200 Clarendon Blvd, S |
| Number 110001 0057 | c | Date 09/27/2010 | Effective/ Revised Date 09/27/2010 | Zone(s) | (Zone AO, t | use Base Flóod Depth) | City Arlington |
| 1100010001 | | 0012112010 | 0012112010 | 1.1 | 1000 | | Signature |
| | | | n (BFE) data or base ermined 🔲 Other/So | | red in Item B9: | | Copy all pages of this Ele |
| | | | | | | | Comments (including ty |
| B11. Indicate ele | vation datum | used for BFE in Item | B9: NGVD 1929 | X NAVD 1988 | 3 Other/Source | e: | Building generator, electron areas |
| B12. Is the build | ing located in | a Coastal Barrier Res | sources System (CBR | S) area or Other | wise Protected Area | (OPA)? 🗌 Yes 🖂 No | Lowest floor of Resider |
| Designatior | n Date: | | CBRS OPA | | | | |
| | | | | | | | |

An Operation and Maintenance (O&M) Program will be established outlining the maintenance requirements and operational procedures necessary for the use of such a system. In addition, a Floodproofing Certificate shall be provided at completion of the project to certify that the entire building perimeter is floodproofed to the DFE of 14.1 feet, as required.

Storage of Materials: Storage for all hazardous materials (required for general maintenance and cleaning of the facility) will be provided within the Janitor's closet located on the first floor and the Mechanical Room/ Water heater room on the Penthouse level, both within the floodproofed building. There will be no other storage of hazardous materials outside of the floodproofed building at this site.

Means of Egress:

Two separate exits, one at V Street and second exit on 1st Street, have been provided from the building. V Street exit is along the North Face facade of the building and is at elevation of 9.95 feet DC Datum (9.85 feet NAVD 88). 1st Street exit is along the East Façade of the building and is at elevation of 9.95 feet DC Datum (9.85 feet NAVD 88). Road grades along V Street generally range from elevation 8.6' to elevation 9.9' along the property.

Due to the grades of the surrounding streets, flood depths between the building and V Street for the 100-year and 500-year flood events will be approximately 1.5 feet and over 5 feet, respectively. Flow velocities at Buzzard Point are expected to be minimal due to backwater conditions from the Potomac River and therefore flood depths up to approximately 2.5 feet are assumed to be acceptable for emergency personnel and residents to wade through flood waters, if necessary.

There will be no sheltering in place and evacuation of building tenants is mandatory in case of a flood emergency.

Refuge Space: Refuge space shall be provided on the ground level in two locations in the event residents will need to be evacuated during a flooding event. One area is located along V Street at the main entrance with space to accommodate 70 people. A second area is located along 1st Street with space to accommodate 70 people.

Flood Warning System: A roof top rainfall monitor will be installed on the roof. The system will allow for remote monitoring at the 24 hour staffed concierge desk in the lobby. The National Weather Service's email alert service will be utilized as the flood warning system that will notify operation and maintenance personnel, as well as residents of the potential for flooding events.

Operations and Maintenance (O&M) Program: An O&M Plan will be developed and kept on site with operations and maintenance personnel that will outline protocol for monitoring potential flood events, ensuring a continual maintenance schedule, performing scheduled maintenance on flood warning and flood protection systems, and updating the Emergency Action Plan

STATEMENT BY PROFESSIONAL ENGINEER REGISTERED IN THE DISTRICT OF COLUMBIA This is to certify that the elevation information data, hydrologic and hydraulic analyses, and any other supporting

data of this floodplain management plan and report have been examined and performed by me and found to be in conformity with modern engineering principles. I further certify that all project works are designed in accordance with sound engineering practices to provide protection from the base flood (also referred to as the "one hundred year flood") and are not impacting other structures and properties, in accordance with the specifications required under Title 20 DCMR, Chapter 31. I understand that any false statement may be punishable by fine or imprisonment pursuant to D.C. Official Code § 22-2405. Michael S. Marsala ame and Title (please type) Hichae 1/632 5300 Wellington Branch Drive Gainesville, VA 20155

Date: 03-14-2018 Phone No: 703-679-5656

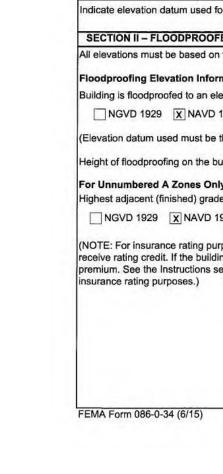
OMB No. 1660-0008 Expiration Date: November 30, 2018 , copy the corresponding information from Section A. FOR INSURANCE COMPANY USE ing Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. Policy Number: State ZIP Code Company NAIC Number District of Columbia 20593 TION C - BUILDING ELEVATION INFORMATION (SURVEY REQUIRED) based on: 🛛 Construction Drawings* 🗌 Building Under Construction* 🔲 Finished Construction cate will be required when construction of the building is complete. A30, AE, AH, A (with BFE), VE, V1–V30, V (with BFE), AR, AR/A, AR/AE, AR/A1–A30, AR/AH, AR/AO. below according to the building diagram specified in Item A7. In Puerto Rico only, enter meters. DPW, Map 12-10 Vertical Datum: used for the elevations in items a) through h) below. NAVD 1988 Other/Source: elevations must be the same as that used for the BFE. Check the measurement used. -9.55 X feet meters cluding basement, crawlspace, or enclosure floor) ____ -0.86 (P1)/ 9.85 (ground) 🛛 feet 🗌 meters n/a feet meters norizontal structural member (V Zones only) _____ achinery or equipment servicing the building 14.1 X feet I meters ipment and location in Comments) 6.64 X feet meters hed) grade next to building (LAG) shed) grade next to building (HAG) 9.95 X feet meters e at lowest elevation of deck or stairs, including 6.43 X feet meters CTION D - SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION ned and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information. on this Certificate represents my best efforts to interpret the data available. I understand that any false e by fine or imprisonment under 18 U.S. Code, Section 1001. Section A provided by a licensed land surveyor? 🛛 Yes 🗌 No 👘 Check here if attachments. License Number ARC5826 ZIP Code Virginia 22201 Telephone 3/12/2018 703-224-1126 1148 Certificate and all attachments for (1) community official, (2) insurance agent/company, and (3) building owner equipment and location, per C2(e), if applicable) room supporting building generator, electrical room for retail tenants, electrical room for residential lobby velling Units is on Level 03 at elevation 32.43 feet NAVD 1988.

Replaces all previous editions.

Form Page 2 of 6

| ELEVATION CERTIFICATE | | | OMB No. 1660- Expiration Date: | 0008 November 30, 2018 | ELEVATION CER |
|---|--|---|---|-----------------------------------|---|
| IMPORTANT: In these spaces, copy the | corresponding information fro | m Section A. | FOR INSURAN | ICE COMPANY USE | IMPORTANT: In these |
| Building Street Address (including Apt., U River Point Partners, LLC | nit, Suite, and/or Bldg. No.) or P.0 | O. Route and Box No. | Policy Number: | | Building Street Addres River Point Partners, |
| City Washington | State District of Columbia | ZIP Code 20593 | Company NAIC | Number | City Washington |
| SECTION E - B | UILDING ELEVATION INFORM FOR ZONE AO AND ZONE | | T REQUIRED) | | |
| For Zones AO and A (without BFE), comp complete Sections A, B,and C. For Items enter meters. | lete Items E1–E5. If the Certificat | te is intended to support | | | The local official who Sections A, B, C (or E used in Items G8–G1 |
| E1. Provide elevation information for the the highest adjacent grade (HAG) an a) Top of bottom floor (including bas | d the lowest adjacent grade (LAG | | ner the elevation is | above or below | G1. The informa engineer, or data in the (|
| crawlspace, or enclosure) is b) Top of bottom floor (including bas crawlspace, or enclosure) is | ement, | | _ | below the HAG. | G2. A communi or Zone AO |
| E2. For Building Diagrams 6–9 with perm the next higher floor (elevation C2.b) | | | | | G3. 🗌 The followin |
| the diagrams) of the building is | | feet 🗌 met | ers 🗌 above or | below the HAG. | G4. Permit Number |
| E3. Attached garage (top of slab) is | | feet 🗌 met | ers 🗌 above or | below the HAG. | |
| E4. Top of platform of machinery and/or servicing the building is | equipment | [] feet [] met | ers above or | below the HAG. | |
| E5. Zone AO only: If no flood depth num floodplain management ordinance? | | | | | G7. This permit has t G8. Elevation of as-t |
| SECTION F - PRO | PERTY OWNER (OR OWNER'S | REPRESENTATIVE) | CERTIFICATION | | of the building: |
| The property owner or owner's authorized community-issued BFE) or Zone AO mus | t sign here. The statements in Se | ections A, B, and E for 2 ctions A, B, and E are c | Zone A (without a l orrect to the best c | FEMA-issued or f my knowledge. | G9. BFE or (in Zone G10. Community's de |
| Property Owner or Owner's Authorized Ro | epresentative's Name | | | | Local Official's Name |
| Address | City | / | State | ZIP Code | Community Name |
| Signature | Dat | te - | Felephone | | Community Name |
| Comments | | | | | Signature |
| | | | | | Comments (including |
| | | | | | |
| | | | Check I | nere if attachments. | |
| FEMA Form 086-0-33 (7/15) | Replaces all previous | s editions. | A 2000 | Form Page 3 of 6 | FEMA Form 086-0-33 (|

Contour Interval: 2' Vertical Datum: NAVD 88 **Topographical Data** District of Columbia County Digital Data **Buzzard Point** Original Scale: 1" = 100'



The floodproofing of non-reside however, a floodproofing design does not alter a community's flo issued an exception by FEMA to separate certification specifying BUILDING OWNER'S NAME River Point Partners, LLC STREET ADDRESS (Including A NUMBER 2100 2nd Street SW OTHER DESCRIPTION (Lot and Square 613, Lot 10, Lan Washington Provide the following from the p

COMMUNITY NUMBER P 110001

Height of floodproofing on the bu For Unnumbered A Zones Onl NGVD 1929 X NAVD 19

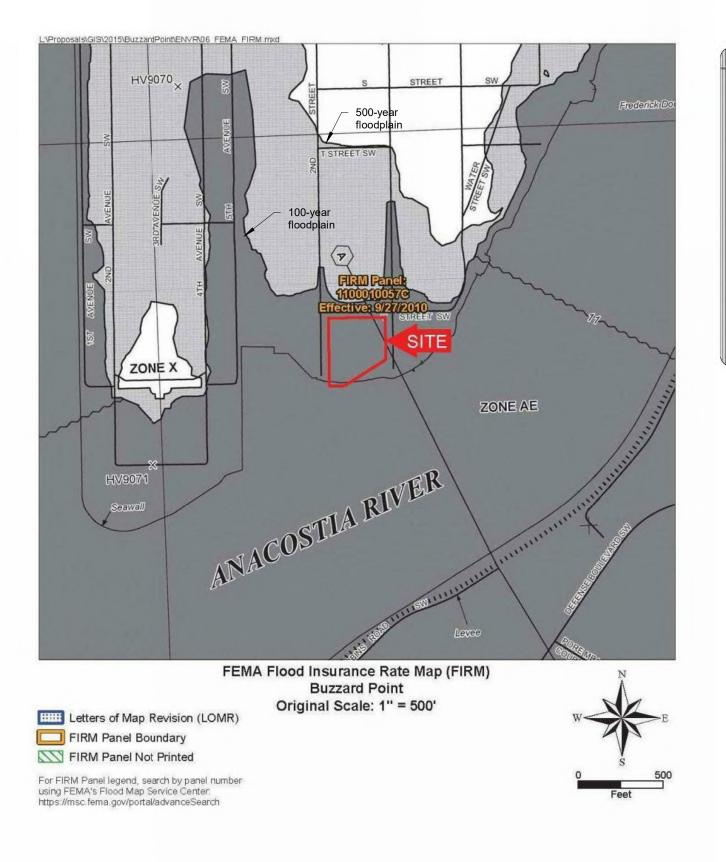
FLOODPROOFING CERTIFICATE FOR NON-RESIDENTIAL STRUCTURES (Continued)

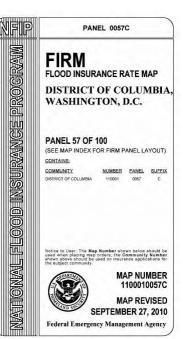
FLOODPROOFING CERTIFICATE FOR NON-RESIDENTIAL STRUCTURES (Continued)

| C | | | | FOR | INSURANCE COMPANY US |
|----------------------|-----------------|-------------------------------|-----------------|--------------|---|
| Longer man | | | | POLI | CYNUMBER |
| Apt., Unit, Suite, a | and/or Bldg. N | umber) OR P.O. ROUTE | AND BOX | | |
| | | | | | |
| d Block Numbers | , etc.) | | | COM | PANY NAIC NUMBER |
| nd Area: 115,4 | | | | | |
| | | | STATE | Zip Co | ode 20593 |
| SECTION I - | FLOOD INSU | RANCE RATE MAP (FIR | | TION | |
| roper FIRM: | | | | | |
| NEL NUMBER | SUFFIX C | DATE OF FIRM INDEX 09/27/2010 | FIRM Z | ONE | BASE FLOOD ELEVATION (in AO Zones, Use Depth) 10.6' |
| r Base Flood Elev | vation shown a | above: NGVD 1929 | X NAVD 19 | 38 🗌 C | ther/Source: |
| ED ELEVATION | CERTIFICATI | ON (By a Registered Pro | fessional | and Sur | eyor, Engineer, or Architect |
| finished construc | | | indepierrent Et | | eyer, Engineer, or Architec |
| mation: | | | | | |
| | 4.1 fe | eet (In Puerto Rico only: | | me | eters). |
| 1988 Other/S | | | | | |
| | | | | | |
| ne same as that t | used for the Ba | ase Flood Elevation.) | | | |
| uilding above the I | owest adjacer | nt grade is 7.46 fe | eet (In Puerto | Rico on | ly: meters). |
| y: | | | | | |
| e next to the build | ing (HAG) | 9.95 feet (In F | Puerto Rico o | nly: | meters). |
| 988 Other/So | ource: | | | | |
| poses, the buildin | g's floodproof | ed design elevation must | be at least 1 | foot aboy | ve the Base Flood Elevation to |
| | only to the Ba | ase Flood Elevation, then | the building's | insurand | ce rating will result in a higher |
| | ion on docum | entation that must accomp | bany this cert | ificate if t | being submitted for flood |
| ection for informat | | | | | |
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| uilding owner. | | | | |
|--|---|---|---|---|
| opy all pages of this Floodproofing Certificate | and all attachments for 1) | | 587-1820 | |
| 1109 Spring St., Suite 510 SIGNATURE | Silver Spring DATE | VA | 20910 | SONAL ENGL |
| ADDRESS | CITY | STATE | ZIP CODE | 10 TK Laur |
| Principal | Tadjer Cohen E | delson Assoc | | * No. 107707 |
| TITLE | COMPANY NAME | | 335 31 | |
| Sanjay Khanna, PE | PE907707 | | | S SNUNY KHANNY |
| CERTIFIER'S NAME | LICENSE NUMBER | (or Affix Seal) | | alcTOF COLU |
| SECTION III – FLOODPROOFET Non-Residential Floodproofed Construction C I certify the structure, based upon developmen inspection, has been designed and constructed equivalent) and any alterations also meet those The structure, together with attendant utili is substantially impermeable to the passa (44 CFR 60.3(c)(3). All structural components are capable of a anticipated debris impact forces. I certify that the information in Section III on thi available information and data. I understand th Section 1001. | ertification: t and/or review of the design, d in accordance with the acce e standards and the following ities and sanitary facilities is v ge of water, and shall perform resisting hydrostatic and hydro s certificate represents a true | specifications, as pted standards o provisions. vatertight to the fl n in accordance v odynamic flood fo and accurate des | s-built drawings f practice (ASC loodproofed dea vith the 44 Cod prces, including | s for construction and physic CE 24-05, ASCE 24-14 or the sign elevation indicated abo le of Federal Regulations the effects of buoyancy, an the undersigned using the |
| IGNATURE | DATE | PHONE | | TACHITEC |
| 2200 Clarendon Blvd, Suite 1150 | Arlington | | | (Surrest |
| DDRESS | | ent STATE | ZIP CODE | Ny 5826 0 2 |
| ITLE President | COMPANY NAME Antunovich Asso | ciatos | | 2 - A |
| Joseph M. Antunovich, FAIA | ARC5826 | | | SET OF COL |
| ERTIFIER'S NAME | LICENSE NUMBER (| or Affix Seal) | 1 | - |
| the undersigned using the available info imprisonment under 18 U.S. Code, Sec | rmation and data. I understa | | | ion and determination by / be punishable by fine or |



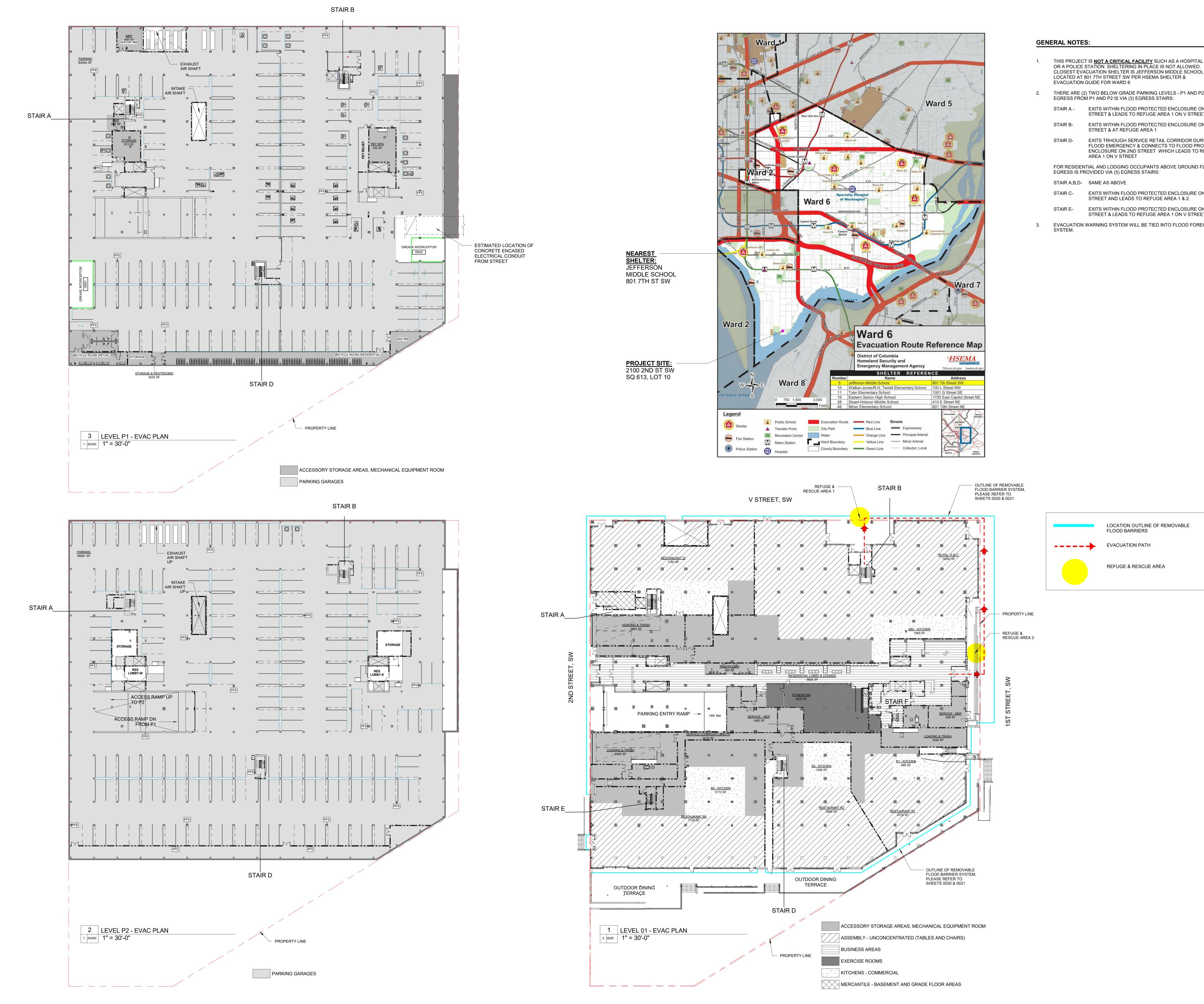


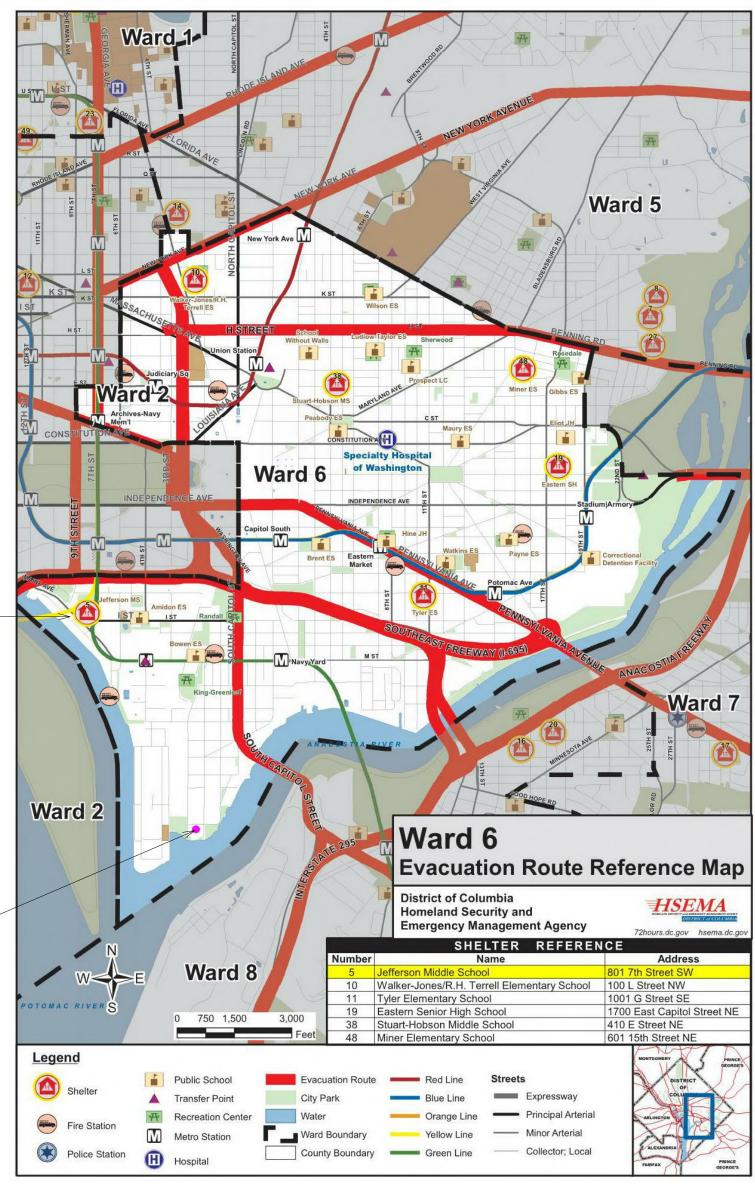


| MPORTANT: In these spaces, copy the corr | esponding information | from Section A. | FOR INSURANCE COMPANY USE |
|---|--|--|---|
| Building Street Address (including Apt., Unit, S River Point Partners, LLC | | | |
| City Washington | State District of Columbia | ZIP Code 20593 | Company NAIC Number |
| SECTION | ON G - COMMUNITY INF | ORMATION (OPTIONA | L) |
| engineer, or architect who is authoriz data in the Comments area below.) | n Certificate. Complete the nter meters. ken from other documenta zed by law to certify eleva | e applicable item(s) and s tion that has been signed tion information. (Indicate | |
| G3. The following information (Items G4- | -G10) is provided for com | munity floodplain manag | ement purposes. |
| G4. Permit Number | G5. Date Permit Issued | Ge Ge | Date Certificate of Compliance/Occupancy Issued |
| G7. This permit has been issued for: | New Construction 🗌 S | ubstantial Improvement | |
| G8. Elevation of as-built lowest floor (includin of the building: | g basement) | [| eet 🗌 meters Datum |
| G9. BFE or (in Zone AO) depth of flooding at | the building site: | f | eet 🗌 meters Datum |
| G10. Community's design flood elevation: | | [f | eet 🗌 meters Datum |
| Local Official's Name | | Title | |
| Community Name | | Telephone | |
| Signature | - 3 | Date | |
| Comments (including type of equipment and lo | cation, per C2(e), if applic | able) | |
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| Owne | Submise | sions & Revisions |
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| Suit Silv | 9 Spring Stre e 510 er Spring, MD ne: 301.587. | 0 20910 |
| | P. & F.P. Eng | |
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| | Engineer | |
| 510 Wa | les-Menso 8th Street, S shington, DC ne: 202.552. | 20003 |
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| We | scape Archite e st 8 Hudson Stre | |
| Suit Nev | e 905 v York, New Y ne: 212.285. | /ork 10013 |
| Gene | ral Contracto | r |
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| | | PROTECTION |
| | | FROIECTION |
| Seal | RIGT OF | Date: 12/14/18 |
| 200 | No/ 58 | 26 Checked By: |
| K | TACHIT | Project No: |
| Draw | ing No. | 021 |
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| 1. | OR A POLICE S CLOSEST EVA LOCATED AT 8 | T IS <u>NOT A CRITICAL FACILITY</u> SUCH AS A HOSPITAL STATION. SHELTERING IN PLACE IS NOT ALLOWED. CUATION SHELTER IS JEFFERSON MIDDLE SCHOOL 301 7TH STREET SW PER HSEMA SHELTER & GUIDE FOR WARD 6 |
|----|--|---|
| 2. | |) TWO BELOW GRADE PARKING LEVELS - P1 AND P2. M P1 AND P2 IS VIA (3) EGRESS STAIRS: |
| | STAIR A - | EXITS WITHIN FLOOD PROTECTED ENCLOSURE ON 2ND STREET & LEADS TO REFUGE AREA 1 ON V STREET |
| | STAIR B- | EXITS WITHIN FLOOD PROTECTED ENCLOSURE ON V STREET & AT REFUGE AREA 1 |
| | STAIR D- | EXITS TRHOUGH SERVICE RETAIL CORRIDOR DURING A FLOOD EMERGENCY & CONNECTS TO FLOOD PROTECTED ENCLOSURE ON 2ND STREET WHICH LEADS TO REFUGE AREA 1 ON V STREET |
| | | TIAL AND LODGING OCCUPANTS ABOVE GROUND FLOOR OVIDED VIA (5) EGRESS STAIRS: |
| | STAIR A,B,D- | SAME AS ABOVE |
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EXITS WITHIN FLOOD PROTECTED ENCLOSURE ON 1ST EXITS WITHIN FLOOD PROTECTED ENCLOSURE ON 2ND STREET & LEADS TO REFUGE AREA 1 ON V STREET

EVACUATION WARNING SYSTEM WILL BE TIED INTO FLOOD FORECASTING

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| Me 122 Suit | P. & F.P. Eng tropolita 5 19th Street e 800 shington, DC ne: 202.296 | n Engineer , NW | ing |
| Wi 510 Was | Engineer Ies-Mens 8th Street, S shington, DC ne: 202.552 | 20003 | tion - DC |
| Land | scape Archite | ect | |
| We 333 Suit Nev | est 8 Hudson Stre e 905 v York, New ` ne: 212.285 | eet York 10013 | |
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| CE 122 Suit Pho Proje | e 300 er Spring, MI ne: 301-680- ct Location 2121 v ing Title LOOD EVACL | 1st St Vashington, DC | Date: 02/14/2020 Drawn By: |

Yulia Beltikova

From: Sent: To: Cc:

Emminizer, John T. Jr (DOEE) <john.emminizer@dc.gov> Monday, August 20, 2018 10:56 AM Yulia Beltikova Huriyet Anaz; Cone, Trevor (DOEE) RE: DOEE - River Point MVQ1800081 - Evacuation Plan

1

Good Morning,

I have reviewed your email and have not further issues or questions

Thanks,

Subject:

John

John T. Emminizer, Jr. Chief, Emergency Operations Department of Energy & Environment Government of the District of Columbia Cell: 202-281-0885 Web: doee.dc.gov

From: Yulia Beltikova [mailto:ybeltikova@antunovich.com] Sent: Monday, August 20, 2018 10:21 AM To: Emminizer, John T. Jr (DOEE) Cc: Huriyet Anaz; Cone, Trevor (DOEE) Subject: RE: DOEE - River Point MVQ1800081 - Evacuation Plan

CAUTION: This email originated from outside of the DC Government. Do not click on links or open attachments unless you recognize the sender and know that the content is safe. If you believe that this email is suspicious, please forward to phishing@dc.gov for dditional analysis by OCTO Security Operations Center (SOC).

Good Morning John,

Could you please let us know you received our responses and whether or not you have any additional comments for us? Thank you,

Yulia

Yulia Beltikova, AIA, LEED AP BD+C Associate Principal ANTUNOVICH ASSOCIATES

Architecture • Planning • Interior Design 2200 Clarendon Boulevard, Suite 1150 Arlington, Virginia 22201 Main: 703.224.1126 www.antunovich.com cloud.antunovich.com

| DIFACE | |
|------------|------------------|
| | NOTE OUR ADDRESS |
| CHANGE | IN OCTOBER 2018! |
| 1144 3rd S | Street NE |
| Washing | ton, DC 20002 |

| From: Yulia Beltikova |
|---|
| Sent: Tuesday, August 14, 2018 10:19 AM |
| To: 'Emminizer, John T. Jr (DOEE)' <john.emminizer@dc.gov></john.emminizer@dc.gov> |
| Cc: Huriyet Anaz <huriyet.anaz@orrpartners.com>; Cone, Trevor (DOEE) <trevor.cone@dc.gov></trevor.cone@dc.gov></huriyet.anaz@orrpartners.com> |
| Subject: RE: DOEE - River Point MVQ1800081 - Evacuation Plan |
| John, |
| Please see below in red responses from the Development Team. |
| Please let us know if you have any other questions or comments. |
| Thank you, |
| Yulia |
| Yulia Beltikova, AIA, LEED AP BD+C Associate Principal |
| ANTUNOVICH ASSOCIATES Architecture * Planning * Interior Design 2200 Clarendon Boulevard, Suite 1150 Arlington, Virginia 22201 Main: 703.224.1126 www.antunovich.com cloud.antunovich.com |
| From: Emminizer, John T. Jr (DOEE) < <u>iohn.emminizer@dc.gov</u> > |
| Sent: Friday, August 3, 2018 3:22 PM |
| To: Yulia Beltikova < <u>vbeltikova@antunovich.com</u> > |
| Cc: Huriyet Anaz < <u>huriyet.anaz@orrpartners.com</u> >; Cone, Trevor (DOEE) < <u>trevor.cone@dc.gov</u> > |
| Subject: RE: DOEE - River Point MVQ1800081 - Evacuation Plan |
| Yulia, |
| Please see below my questions / comments that need to be addressed prior to acceptance of |
| the second design of the second se |

the plan; 1. The information provided does not indicate the width of the evacuation path between the building and flood protection devices.

North Refuge Area on V Street: Distance from façade to the flood barrier varies: from 6 ft at the entry doors and 3 ft on each side of the entry doors.

East Refuge Area on 1st Street: Distance from façade to the flood barrier is 22 ft. 2. The drawings clearly indicate that the perimeter of the flood barriers are outside of the shown property line.

Please provide some proof that an easement or permission has been granted to install flood protection at this

2

be pushed back into the evacuation zone.

3. Have the areas of refuge and rescue been reviewed with the DC Fire and EMS to ensure they can safely access these points to affect a rescue if necessary? Applicant received approval for Fire and Life Safety review from DCRA (building permit B1803132). No additional

with disabilities or functional needs.

evacuated.

location. The evacuation concern is if this permission is rescinded or revoked that flood protection may have to

Temporary flood barriers are outside of the property line on East, West and North sides of the building during a flood event or scheduled annual maintenance training. The only elements that will remain permanently in public space will be ½ inch in diameter anchor bolts installed flush with sidewalk. Placement of temporary and permanent elements associated with flood protection have been discussed with DDOT, DOEE and OP staff and submitted for Public Space review and approval. Public Space submission is currently under review by DCRA. Submitted drawings provide information of components that will be installed outside of the property line, and in public space.

meetings were requested during review process.

4. Due to the height of the flood barriers what is the plan to get evacuees to boats or rescue vehicles on the other side of the wall should they become trapped? Specifically of concern is there a provision for residents or visitors

Evacuation of all residents and all tenants is mandatory, and will be written into the lease agreements. All residents will be required to evacuate prior to onset of a flood event. This project is not a critical facility such as a hospital or a police station. Sheltering in place is not allowed. Aluminum 'crossover' portable ladder will be provided at each refuge area to reach over the flood barrier. Additionally, a portable wheelchair ramp can be provided for those with mobility issues.

5. The drawings provided provide path and rally points but do not provide detailed information on how an evacuation will be managed. The following details will need to be provided before acceptance of this plan; • What will be the buildings criteria for evacuation of residence?

> Flood evacuation will be per building's Flood Emergency Action Plan submitted with this code modification (also attached). Please refer to page 3 of the attached PDF.

• How will this evacuation information be conveyed to residence and visitors at the time of evacuation?

Property management personnel will conduct door-to-door notifications to ensure the area is Designated building emergency personnel will remain on site to monitor flood conditions. Emergency

power will be provided by the building generator. What are the steps that will be taken in the management of the evacuation and identification of those

3

that refuse to evacuate? Evacuation of all residents and all tenants is mandatory, and will be written into the lease agreements.

• What is the plan for evacuating those with disability or mobility issues?

Residents with disability or mobility issues will be evacuated prior to onset of a flood event. In case there is a person(s) with mobility issues, portable wheelchair ramp can be provided.

- Has any coordination been done with the closest shelter so they are aware you have designated them as your primary?
- Development team is in the process of reaching out to the shelter (Jefferson Middle School located at 801 7th Street SW). How will the flood evacuation plan be available and communicated to the building residents and

occupants? Flood emergency plan will be posted permanently in at least two conspicuous locations within the building. Proposed locations are shown in the flood protection plan previously submitted to DOEE. Proposed locations include areas by the commercial loading docks, at the main residential entry & within North retail service corridor exiting to Refuge Area on 1st Street, as well as within egress areas exiting towards Refuge Area on V Street. A copy of Flood Evacuation Plan will also be available at the leasing office.

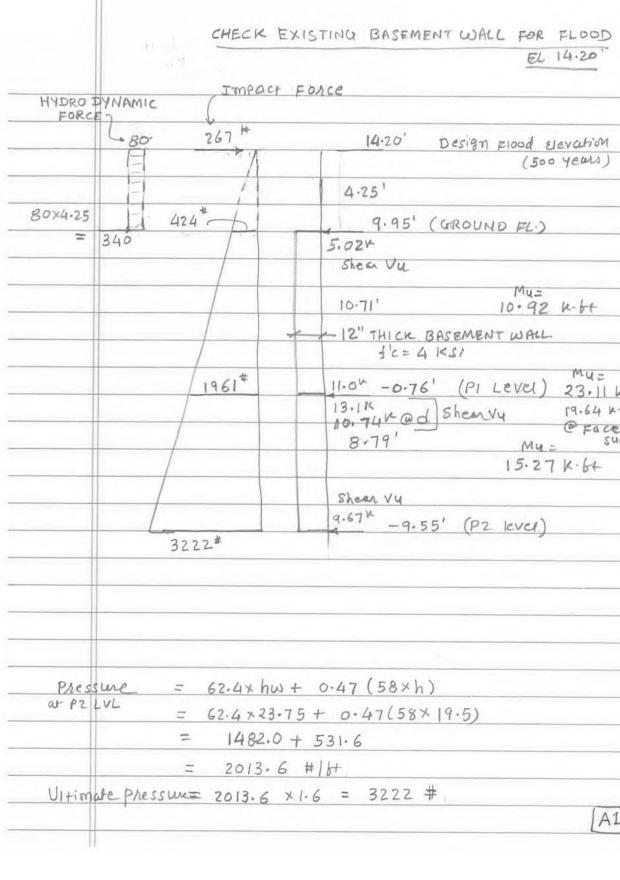
Regards,

John



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| 10 No. | 12/14/18 Date | | Des s & Re\ | cription | |
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August 27, 2018 Semere Hadera, PE

Structural Eng, Supervisor, POD Department of Consumer and Regulatory Affairs

1100 4th St. SW Washington, DC 20024

ph. 202-442-4673 semere.hadera@dc.gov

Re: Project Address: 2100 2nd St, SW/ Code Modification MVQ1800081 Responses to structural comments dated August 22, 2018

Dear Mr. Hadera,

Below please find responses related to the design of structural elements associated with Code Modification MVQ1800081 for River Point project located at 2100 2nd Street SW. 1. Introduction:

This document has been prepared in response to structural review comments associated with Code Modification MVQ 1800081 for 2100 2nd Street SW project (Building Permit Application B1803132).

2. Site Description:

The project is located within the 100-year floodplain in flood zone AE, but it will be designed to protect the building up to an increased 500-year floodplain per City's recommendation based on ongoing climate change studies. Flood protection is planned to be achieved via a dry flood proofing method. It will be accomplished through a combination of flood-damage resistant materials and use of removable flood barriers (per flood protection plan previously submitted on sheet 0020) which will be deployed manually in case of a flood event warning.

100-year flood elevation = 10.7' el. (DC Datum) OR 10.6' el. (NAVD 88) 100-year flood elevation + 1.5 ft of freeboard = 10.7' + 1.5'=12.2' el. (DC Datum) OR 12.1' el. (NAVD 88)

500-year flood elevation = 14.2' el. (DC Datum) OR 14.1' el. (NAVD 88)

Zivan Cohen P.E. | Varinder M. Abrol P.E. | Michael Tabassi P.E. | J. Kelley White | Ali R. Tahbaz P.E. | Sanjay Khanna P.E. Yehuda Nordman P.E., S.E. | Dipak M. Shah P.E. | Xinzhang Li P.E. | Harsha Wijeweera | Peter White P.E. Jacob Steinbach P.E. | Arif Mahmood P.E. | Ashfaq Ahmed P.E. | Hong Ye P.E. | Palas Sarkar | Eyoel Temesgen P.E. Sebastian Janik P.E. | Ervin Rogers, Jr., P.E. | Muzaffar Ali Zaki 1109 Spring Street • Fifth Floor • Silver Spring • Maryland • 20910-4082

August 27, 2018 Semere Hadera, PE 4 . Structural Eng, Supervisor, POD Department of Consumer and Regulatory Affairs

Project Address: 2100 2nd St, SW/ Code Modification MVQ1800081 Responses to structural comments dated August 22, 2018

The existing 30 inch thick mat slab foundation needed to have tie-down (also referred to as micropiles) anchors to withstand uplift forces associated with 500-year flood under the courtyards.

The existing foundation walls were checked, and are found to be able to resist hydrostatic, hydrodynamic and impact forces associated with a 500-year flood. Additionally, there are limited portions of exterior walls at the Southeast and Southwest corners of the building envelope which will be built anew, and will have an 8 to 10 inch thick concrete back-up wall in height up to 500-year flood elevation. These new walls are designed to withstand required forces associated with 500-year flood as well.

A majority of the exterior façade has openings consisting of storefront windows and doors. To prevent flood waters from entering the building, removable flood barrier panels are proposed to be installed up to the required 500-year flood elevation. Design of these removable flood barrier panels is by others, calculations associated with that design have been also submitted the previous submissions.

- B. The existing mat foundation at the transfer girder supporting column for revised increased loads.
- B The existing columns which support the transfer girder for revised increased loads. 6. Method of Design and Analysis:

To demonstrate that foundation will be able to withstand uplift water pressure Geotechnical Study described in Memorandum No. 3 prepared by ECS was used. It addresses geotechnical design requirements resulting from the 500-year flood. To address the increase in water pressure, ECS evaluated two items: 1) the positive effects of soil friction along the basement walls, and 2) the time rate effects of the flood, and whether or not the flood stage persists for sufficient

To demonstrate that existing foundation walls and portions of exterior walls that were not protected by removable flood barriers will be able to withstand all necessary forces associated with 500-year flood (see calculations pages A1 to A4).

time to increase water pressure below the mat.

Hydrostatic and Hydrodynamic forces were calculated to withstand up to 500-year flood elevation. For impact loads due to debris acting on exterior walls that are not protected by removable flood barriers 1,000 lbs force was used in accordance with ASCE 7-10 Eq C5-3, with Velocity of Water not to exceed 5 ft/s in accordance with dry flood proofing requirements of ASCE 24-14 Section 6.2.1.

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EL 14.20 ----Design plood Elevation (500 years) 9.95' (GROUND FL.) Mu= 10.92 K-64 - 12" THICK BASEMENT WALL Myz 11.04 -0.76' (PI Level) 23.11 K.H. 19-64 K- 5+ @ Face of SUPPORT Mu = 15.27 K.64 9.67 - 9.55' (P2 level)

[A1]

A2 3.0

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Existing Top of P1 Level = -0.76' el. (DC Datum) Existing Top of Ground Floor Level = 9.95' el. (DC Datum)

3. Brief Description and Assessment of the Existing Structure and Structural Elements: The project's design, orientation and massing are based on the adaptive reuse of the existing

building which requires carving out four residential courtyards starting with 3rd floor level to maximize articulation and views for residents and visitors. The existing structure is a conventionally reinforced concrete structure consists of: a. (2) two below grade parking levels P1 and P2 b. (8) eight above grade levels

a. Existing Foundation: The existing building is supported on a 30-inch thick mat foundation.

and-tear.

Note: Tie-down details and tie-down anchors plan were submitted and approved with supplemental structural permit B1810745, details were shown on structural sheet S001 of that submission.

b. Existing 2nd Floor Slab: rebar (see calculations pages 1 to 10).

c. Existing 3rd Floor Slab: d. Existing 4th through 8th Floor Slabs:

the residential units

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7. Proposed Solution: alterations are being proposed:

101, 102 to 108).

ASCE 7-10 - Minimum Design Loads for Buildings and Other Structures ASCE 24-14 - Flood Resistant Design for Construction 2013 District of Columbia Building Code, Section 1612 - Flood Loads 9. Requirements of ASCE-7 10, ASCE-24 and DCBC 1612:

standards.

| | Mu (tre) = 15-27 K-61- |
|---|-----------------------------------|
| Pressure = 62.4 × 14.96 + 0.47 (58× 10.71) | K., 15 374 19400 |
| at Plievel = 933.50 + 292 = 1225.5 | 12×10.52 = 138-50 |
| Ultimate pressure = 1225.5×1.6 = 1961 # | 9=0.0026 |
| | AJ = 0.0026 × 12 × 10.5 = 0.33 in |
| | Plovided # 5@9" OK |
| Hydrodynamic pressure | As = 0.41 in2 > 0.33 in2 |
| $dh = q \cdot V \omega^2 = 2 \times 5^2$ | Mu(+ve) = 10-92 K-tr |
| Velocity = 5 tt sect. 2.9 = 2×32.2 = 0.78 tt | K4 = 10.92 × 12000 = 95 |
| Pd = dhx V water | 12×10.752 |
| = 0.78× 62.4 = 49.69 PSF. | 8= 0.0018 |
| | As= 0.0018 × 12 × 10.75 |
| ultimate = 1.6 × 49.69 = 80 pst | = 0.23 in2 |
| | #4@12" A320.20 in2 = 0.23 in2. |
| Impact porce = 1000 # | Wall has compression reint also. |
| 1000 = 166.67 #164 | Accepted. |
| 6' | |
| Ultimate = 166-67×1.6 | the state |
| = 267 # (b+ | |
| | |
| Shew cupacity = 0.75×254000×12×10 | .*** |
| = 11.38K > 10-74K | |
| MU-ve = 23.11 ik # | |
| | |
| $\frac{k_{u}}{bd^{2}} = \frac{23 \cdot 11 \times 12000}{12 \times 10^{2}} = \frac{231 \cdot 1}{As} = \frac{\beta = 0.0045}{0.0044 \times 12 \times 10}$ | |
| $= 0.53 i n^2/ft$ | |
| #5@7" 0- C Provided = 0-53 in2/6- [A3] | |

Existing Top of P2 Level (Foundation) = -9.55' el. (DC Datum)

Proposed structural scope of alteration includes:

Tie down anchors (micro piles) will be added at the footprint of four courtyards areas through the existing mat foundation to resist water uplift pressure due to potential flood. A 3-inch concrete topping will be added on top of mat foundation to strength it to resist potential uplift forces and repair existing damage due to wear-

Demolition of existing 2nd floor slab in its entirety to create a double height space at ground level for Retail Users. Supporting existing columns in these high spaces will be strengthened by enlarging them on all sides with several inches of concrete and

Partial demolition of existing the 3rd floor slab for the purposes of creating four residential courtyards. Courtyard portions of the slab will be removed and re-poured to allow for landscaping and paving within the courtyard.

(4) four courtyards will be carved out of the existing floor slabs to provide light to

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A. For the existing structure to be able to withstand forces (uplift, hydrostatic, hydrodynamic and impact) associated with 500-year flood event the following a. Addition of tie-down anchors through the existing mat foundation at four courtyards area (structural sheet S001, B1810745 and see structural calculations pages 100,

b. Addition of 3" concrete topping on top of the existing mat foundation (P2 level) and add 6" concrete topping slab on top of the new 14" penthouse level slab at tower area (see calculations pages 96, 97 and 101 to 108). c. Addition of 8 to 10 inch thick concrete backup walls up to 500-year flood elevation of 14.2' in limited select locations where building façade is not protected by removable flood barriers. Those locations are the exterior perimeter at Southeast and

Southwest corners of the building envelope. B. The existing mat foundation at the transfer girder supporting column needed to be strengthened for revised increased loads. Increase the mat thickness by 3" structural topping slab with rebar and strengthen the existing column with enlarging on all four sides by 5" of concrete and rebar (see calculation pages 87 to 95). C. Check The existing column which support the transfer girder needed to be

strengthened for increased loads. Strengthen the existing column with enlarging on all sides by 5" of concrete and rebar (see calculation pages 17 to 66). 8. List of Referenced Codes & Standards:

Please refer to structural calculations that demonstrate compliance with referenced

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e. Existing Roof Slab (New Penthouse floor level): Demolition of existing roof slab in its entirety and re-pouring of a new 14" thick concrete roof slab with 6" of concrete topping slab (total thickness of concrete = 20"). The topping slab is added to resist the flood uplift forces. Addition of a Penthouse Level on top of re-poured slab.

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- f. <u>New Penthouse roof:</u> The Penthouse roof is composite steel construction (3.25" concrete over 3" steel deck supported on steel beams and columns.
- g. New Shear Walls: New shear walls will be added from top of mat to underside of third floor slab to resist the lateral forces.
- h. New Stair and Elevator Slab Openings: New stair and elevator slab openings above 3rd floor will be supported by new steel beams and steel columns as required.
- i. Slab extension on 3rd through Penthouse Floor (gridlines 14 to 15): One bay will be added at south side of the building, starting at level 3 and continue up to new Penthouse level. The added bay will be an 8-inch thick concrete slab with concrete beams ranging in depth from 20 to 24 inches. Extended south bay will be supported by new concrete columns on the southern edge. The existing columns were checked for the additional loads (see calculations pages 67 to 86).
- 4. Problem statement:

The removal of portions of existing concrete slabs associated with the creation of four residential courtyards reduce the building weight resisting the flood uplift forces and resulted in a net uplift is created at the courtyards area.

- DOEE requested to have structural elements designed to withstand forces associated with 500-year flood. Those structural elements included: a. existing mat foundation,
- b. existing foundation walls, and c. limited portions of above grade exterior walls that were not protected by removable flood barriers. Those portions were located at southeast and southwest corners of the building.

5. Challenges:

A. To prevent uplift existing structure will require to be modified.

6 August 27, 2018 Semere Hadera, PE Structural Eng, Supervisor, POD Department of Consumer and Regulatory Affairs Project Address: 2100 2nd St, SW/ Code Modification MVQ1800081

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10. Conclusion:

Existing structural components will be able to withstand required forces associated with a 500-year flood event provided proposed structural alterations of adding tie-downs and thickened concrete backup walls in limited locations are provided.

Should you have any questions, please don't hesitate to contact our office.

Sincerely, Kuanne Sanjay Khanna, PE Principal

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| 10 12/14/18 IFC | |
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| No. Date Description Submissions & Revisions | |
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